(Ao), high mortality components, and other metrics useful for predicting/planning ongoing operations and maintenance.

The maintenance and logistics support approach should ensure the continued capability and availability of the surveillance systems at best cost through the annual Operational Analysis conducted to determine if the investment is meeting its performance goals. Each Operational Analysis should assess compliance with all KPPs.

2.3.2 TRAINING

A comprehensive Train-the-Trainer (T3) course will be developed by the contractor to allow CBP to establish a group of Master RVSS Trainers. Upon transition from Contractor Logistics and Maintenance Support to Government support, OTIA, in conjunction with Office of Border Patrol will be responsible for training USBP operators in system use. The designated maintenance provider will be responsible for maintenance training of the system.

3 EFFECTIVENESS REQUIREMENTS

The following requirements describe the RVSS performance attributes that support the Persistent Surveillance and C4I capabilities. Traceability to the mission elements and these capabilities is provided in Table 4, Appendix 2. Thresholds (T) and Objectives (O) are defined where applicable, and KPPs are highlighted in bold. The term "shall" reflects a required feature or characteristic. Requirements that do not specify a threshold or objective are, by default, threshold requirements. Where the term "option" is used, USBP intends to employ this capability on an optional basis as required according to local operational needs and threat tactics. (An example of this concept is provided in the rationale under requirement 3.1.1) As noted previously, the operational needs, tactics, and geographical constraints vary widely across the AoI where RVSS will be used, so several of the effectiveness requirements focus on the level of performance expected from a *single* RVSS unit (i.e. single mounting structure and (b) (7)(E)). The effectiveness requirements are applicable 24/7 to a FOV with a clear line of site (LoS) under typical terrain, foliage and environmental conditions as prescribed in Section 4.9, unless otherwise noted. To reiterate – with respect to the RVSS program, these requirements are a framework for evaluating and selecting among non-developmental, GOTS, or COTS systems. The actual procurement will be a capability-based one that reflects appropriate trade-offs among performance and cost. As indicated elsewhere in this document, all performance requirements are prioritized and may be waived to reflect the results of the capability-based procurement, consistent with the terms of this ORD.

3.1 PERSISTENT SURVEILLANCE

3.1.1 DETECT AND TRACK

RVSSORD 01: A single RVSS unit shall provide a FOV with the maximum surveillance range options as follows:

(b) (7)(E)

Rationale: The requirements for range vary depending on threat and deployment location. (b) (7)(E) *Regardless of whether the AoI is in an urban, rural or remote environment, the final* (b) (7)(E) *should maximize coverage of the AoI while minimizing the number of fixed site installations because of land ownership and environmental constraints prevalent along the U.S. border.*

RVSSORD 02: A single RVSS unit shall provide a horizontal FOR of (b) (7)(E).

Rationale: While the concept of operations for RVSS is to focus primarily on a (b) (7)(E)

RVSSORD 03: A single RVSS unit shall provide an optional feature for a persistent, panoramic FOV of the border to detect IoIs out to ranges of (b) (7)(E)

Rationale: USBP requires this supplemental (b) (7)(E) *in specified areas to mitigate threat tactics that include* (b) (7)(E) *This capability will provide supplemental,* (b) (7)(E) *to counter these tactics and provide persistent surveillance while the* (b) (7)(E).

RVSSORD 04: The RVSS shall provide video of sufficient quality and resolution[11] out to the required ranges that enables the operator to detect the following IoIs: (b) (7)(E)

Rationale: The types of threats vary depending upon deployment location – border threats in urban and remote areas include individuals, groups, and conveyances that attempt to (b) (7)(E).

RVSSORD 05: A single RVSS unit shall provide video of sufficient quality and resolution to enable an operator to detect the presence of a (b) (7)(E)

(b) (7)(E)

[11] Sufficient quality and resolution is defined as an accurate reproduction of the scene captured by the imaging device that does not contain noticeable distortion, degradation, noise, or artifacts. This is applicable to all RVSS units within an RVSS system.

[12] Typical LoS conditions vary from full LoS of IoIs, to partially obscured, to intermittent, where an IoI is fully visible for short durations and is then obscured for short durations. Typical LoS conditions are further quantified in the FRD.

b. (b) (7)(E)

Rationale: This level of performance ensures that USBP will be able to detect the types of threats encountered under typical operating conditions. (b) (7)(E)

3.1.2 IDENTIFICATION AND CLASSIFICATION

RVSSORD 06: The RVSS shall provide video within the required ranges of sufficient quality and resolution to enable an operator to determine whether the IoI is human, conveyance, or animal.

Rationale: Finding and identifying of IoIs within the video scene is a critical task conducted by the operator using the video provided by the system, so the video must be of sufficient quality to do so. Note: (b) (7)(E)

RVSSORD 07: The RVSS shall provide video within the required ranges of sufficient quality and resolution to enable an operator to determine IoI (b) (7)(E)

Rationale: Illegal drug and alien smuggling organizations that (b) (7)(E)

RVSSORD 08: The RVSS shall provide an optional feature for video within the (b) (7)(E) of sufficient quality and resolution to enable an operator to discern specific identifiable IoI characteristics.

Rationale: Urban environments where these systems are (b) (7)(E) *The ability to discern IoI characteristics such as* (b) (7)(E)

RVSSORD 09: A single RVSS unit shall provide video of sufficient quality and resolution to enable an operator to identify that a (b) (7)(E) **under typical LoS conditions at the following ranges:**

(b) (7)(E)

Rationale: This level of performance ensures that USBP will be able to identify the types of threats encountered under typical operating conditions. (b) (7)(E)

3.2 COMMAND, CONTROL, COMMUNICATION, COORDINATION AND INTELLIGENCE

3.2.1 SYSTEM COMMAND AND CONTROL

RVSSORD 10: The RVSS shall provide the operator with near real time control of the following at the designated C2 center(s): (b) (7)(E) [redacted]

Rationale: The operators require the ability to make system adjustments real time as events unfold and IoIs are detected by RVSS and other sources.

RVSSORD 11: The RVSS shall provide USBP-authorized personnel with near real time control of system and sub-system reboots and any system settings that can adversely affect system performance.

Rationale: These controls should be limited to authorized personnel given the potential impacts to operations while the systems/sub-systems are down or degraded.

RVSSORD 12: The RVSS shall enable the (b) (7)(E) [redacted]

Rationale: (b) (7)(E) [redacted]

RVSSORD 13: The RVSS shall enable an operator to (b) (7)(E) [redacted] y.

Rationale: (b) (7)(E) [redacted]

3.2.2 COMMUNICATION

RVSSORD 14: The RVSS shall transmit all RVSS video to the designated C2 center in near real time and display video in the designated C2 center in near real time.

Rationale: Real time video display of the AoC is necessary to provide BPA's situational awareness and the capability to respond in a timely manner. System latency must be limited to the extent that USBP can effectively and efficiently use the system to detect, track, identify, and classify IoIs.

3.2.3 OPERATOR INTERFACE AND TOOLS

RVSSORD 15: The RVSS shall enable the operator to (b) (7)(E) [redacted]

Rationale (b) (7)(E) [redacted]

RVSSORD 16: The RVSS shall provide a (b) (7)(E) [redacted]

Rationale: (b) (7)(E)

RVSSORD 17: The RVSS shall provide the (b) (7)(E)

Rationale: (b) (7)(E)

RVSSORD 18: The RVSS shall display to the operator (b) (7)(E)

Rationale: Operators require (b) (7)(E)

RVSSORD 19: The RVSS shall enable operator selection, de-selection, and customization of tools and aids individually.

Rationale: Operator customization enhances operational efficiency. (b) (7)(E)

RVSSORD 20: The RVSS shall provide an operator option for the (b) (7)(E) as the IoI moves within the FOR.

Rationale: (b) (7)(E)

RVSSORD 21: The RVSS shall provide an operator option for the (b) (7)(E)

Rationale: (b) (7)(E) *This capability can substantially increase operator efficiency and reduce operator fatigue.*

RVSSORD 22: The RVSS shall enable the operator to (b) (7)(E) [redacted]

Rationale: (b) (7)(E) [redacted]

3.2.4 RESPONSE SUPPORT

RVSSORD 23: The RVSS shall provide an optional feature for the (b) (7)(E) [redacted]

Rationale: (b) (7)(E) [redacted]

RVSSORD 24: The RVSS shall report the (b) (7)(E) [redacted]

Rationale: (b) (7)(E) [redacted] *The threshold and objective values are based on the expertise of USBP field agents collected and validated at multiple Operator Workshops.*

RVSSORD 25: The RVSS shall provide an optional feature to (b) (7)(E) [redacted]

Rationale: (b) (7)(E) [redacted]

RVSSORD 26: The RVSS shall provide an optional (b) (7)(E) [redacted]

Rationale: (b) (7)(E) [redacted]

3.3 DETERRENCE SUPPORT

RVSSORD 27: The RVSS shall have an optional feature to (b) (7)(E) [redacted]

Rationale: (b) (7)(E) [redacted]

3.4 PREDICT (INTELLIGENCE) AND RESOLVE (REPORTING) SUPPORT

RVSSORD 28: The RVSS shall, without operator intervention, continuously timestamp, record, and store all RVSS video (at the same quality and resolution as provided to the operator) and associated metadata for a minimum of (b) (7)(E) (O) to support forensic analysis, data and trend analysis, and law enforcement/judicial process.

Rationale: Data storage is required to support (b) (7)(E) *reporting requirements and any need to pull information in support of shift changes and post-event activities that include forensic analysis, data and trend analysis, and law enforcement/judicial process.*

RVSSORD 29: The RVSS shall enable the operator to store video, individual frames, and associated IoI data for indefinite periods of time on the workstation.

Rationale: Operators need the ability to store supplemental information for other operators or agents as a part of on-going IoI investigations, shift changes, post-event activities, on the job training, etc.

RVSSORD 30: The RVSS shall enable the operator to retrieve and view system and operator-stored video, individual frames, and associated metadata on the display immediately upon operator request.

Rationale: Data retrieval and the ability to study individual frames for detail enhances RVSS operator IoI investigations, facilitates operator data requests, and facilitates follow-on law enforcement activities, such as trend analysis and legal court proceedings.

RVSSORD 31: The RVSS shall enable USBP-authorized personnel to extract and export video, individual frames and associated metadata in formats compatible with CBP computer resources.

Rationale: Data retrieval and analysis during and/or after missions/events by authorized users will enhance operator IoI investigations and facilitate operator data requests.

3.5 INTEROPERABILITY

RVSSORD 32: The RVSS shall be capable of receiving and displaying video from the RVSS video sources (T), and video from other (b) (7)(E) within the AoR that use open standards and are certified and accredited (O).

Rationale: USBP (b) (7)(E) [redacted] *and other areas. The ability to view video from multiple systems, as well as any future systems acquired that use open standards, using RVSS can enhance operational efficiency and reduce the equipment and logistics footprint. This interoperability is*

important because certain (b) (7)(E) *USBP has* (b) (7)(E) *the designated USBP Station. USBP also employs* (b) (7)(E) *as well as any future systems acquired that use open standards, using RVSS displays and workstations wherever possible can reduce the equipment and logistics footprint and enhance operational efficiency.*

4 SUITABILITY REQUIREMENTS

The following requirements describe the basic attributes required in support of sustainment and support capabilities. To reiterate – with respect to the RVSS program, these requirements are a framework for evaluating and selecting among non-developmental, GOTS, or COTS systems. The actual procurement will be a capability-based one that reflects appropriate trade-offs among performance and cost. As indicated elsewhere in this document, all performance requirements are prioritized and may be waived to reflect the results of the capability-based procurement, consistent with the terms of this ORD.

4.1 DESIGN

RVSSORD 33: The RVSS shall not interfere with or degrade the operation of CBP and other agencies' equipment.

Rationale: The system must not interfere with existing equipment used in proximity to RVSS, such as (b) (7)(E)

4.2 AVAILABILITY / RELIABILITY

RVSSORD 34: The RVSS Operational Availability (Ao) shall be equal to or greater than (b) (7)(E) **(O), where Ao is defined as [mission capable time (sum of all mission critical subsystems and units) divided by total time (mission capable time plus down time)] x 100 (KPP).**

Rationale: USBP must perform critical mission elements 24/7 without significant disruption or degraded capability. The system is considered operationally available when it can perform in accordance with the operational requirements. The system is not mission-capable under any condition that prevents operator detection, tracking, identification, or classification of IoIs within an AoC.

4.3 MAINTAINABILITY

RVSSORD 35: The RVSS shall (b) (7)(E)

Rationale: The RVSS performs mission critical functions; as such, (b) (7)(E)

4.4 Supportability and Sustainment (Integrated Logistics Support)

RVSSORD 36: The RVSS MDT ([redacted], where MDT includes both MTTR (the system failure) and MLDT.

Rationale: USBP seeks to minimize system down time; however, a shorter MDT could [redacted]

RVSSORD 37: The RVSS support shall provide 24/7 on-call technical assistance.

Rationale: USBP conducts operations 24/7 and needs the ability to discuss system issues/questions regarding system operation, tools and functionality, system errors and health reports, reset passwords (if applicable), etc. with a "helpdesk" that is available 24/7.

RVSSORD 38: The RVSS support shall provide the means to assess system performance against KPPs over the life of the system.

Rationale: Operation and maintenance over time can degrade system performance; the extent of this performance degradation must be documented in order to assess the impact on the mission and to plan operational mitigations accordingly.

4.5 Survivability

RVSSORD 39: The RVSS shall be [redacted] that adversely affects system performance in accordance with DHS/CBP policy and procedures.

Rationale: [redacted]

4.6 Security

RVSSORD 40: The RVSS shall be protected against unauthorized access to the system and its data in accordance with DHS/CBP policy and procedures.

Rationale: Collected imagery and surveillance subsystem C2 needs to be protected against unintentional disclosure and criminal intrusion [redacted] *or other means.*

4.7 Safety

RVSSORD 41: The RVSS shall be safe to operate and maintain as required by applicable Occupational Safety and Health Administration (OSHA) standards and CBP policies and procedures.

Rationale: As stated.

4.8 Human Factors/Human Machine Interface

RVSSORD 42: The RVSS workstation shall accommodate operators ranging from [redacted] male for reach and access, viewing displays and controls, ingress/egress and personnel equipment and facilities.

Rationale: The system must physically accommodate the majority of operators and minimize the potential for fatigue or injury over the course of short and long term use

4.9 Environmental Considerations

RVSSORD 43: The RVSS shall operate in Urban, Rural (b) (7)(E) Remote ((b) (7)(E)

Rationale: USBP is responsible for maintaining persistent surveillance throughout the Southwest and Northern Border areas which include urban/suburban (e.g., El Paso, San Diego), rural (b) (7)(E) *, Remote (*(b) (7)(E) *), and* (b) (7)(E) *. While FOC is currently limited to the Arizona border, it is anticipated that upgraded RVSS will be needed beyond Arizona. Therefore, systems that can operate effectively in conditions along the remainder of the Southern, Northern, and Coastal borders may provide some cost and maintenance efficiencies. While the installed location of an RVSS will dictate* (b) (7)(E) *, the system must be capable of operations across the range of Key Attribute Sets defined in Section 5 of the DRM.*

RVSSORD 44: The RVSS shall be (b) (7)(E) .

Rationale: The system must support USBP operations, (b) (7)(E) *See also, rationale for RVSS ORD 43. Specific climatic conditions to be met are defined in Appendix H to the DRM.*

RVSSORD 45: The RVSS shall operate in typical wind, humidity, and temperature ranges for the deployed area.

Rationale: High winds and extreme temperatures are commonly found along the border; as such the system must be capable of conducting its assigned mission functions under expected operating conditions. Specific climatic conditions to be met are defined in Appendix H to the DRM.

4.10 Training Requirements

RVSSORD 46: RVSS operation shall not require skill sets beyond those currently required for USBP agents and Sector Enforcement Specialists.

Rationale: USBP must be able to use existing work force to operate the system and currently has no plans to create a new occupational specialty for this position; a need to recruit and hire individuals with a different skill set can have substantial personnel implementation and cost impacts. Note - C2 technicians and operators will require specialized training composed of a combination of operator and maintenance training.

RVSSORD 47: The RVSS training material shall be an integrated part of the system support package.

Rationale: USBP must be able to use existing personnel to train operators. Training may encompass instructor and user guides, web-based training material for operators, as well as all maintenance manuals and maintenance training material.

RVSSORD 48: The RVSS shall provide a capability for off-line simulation/training of operators in the use of workstation and control functions.

Rationale: This capability is a valuable training tool for operator familiarization and proficiency.

5 KEY PERFORMANCE PARAMETER SUMMARY

Table 2 - Key Performance Parameters

Parameter	Requirement	Threshold	Objective
Operator Detection Range: (b) (7)(E)	ORD 05	(b) (7)(E)	(b) (7)(E)
Operator Identification Range: (b) (7)(E)	ORD 09		
System Operational Availability (Ao): The RVSS Operational Availability (Ao) shall be equal to or greater than (b) (7)(E) (O), where Ao is defined as mission capable time (sum of all mission critical subsystems and units) divided by total time (mission capable time plus down time).	ORD 34		

ACRONYMS

Ao	Operational Availability
AoA	Analysis of Alternatives
AoC	Area of Coverage
AoI	Area of Interest
AoR	Area of Responsibility
APSS	Agent Portable Surveillance System
ATV	All Terrain Vehicle
BPA	Border Patrol Agent
C2	Command and Control
C4I	Command, Control, Communications, Coordination & Intelligence
CBP	Customs and Border Protection
COI	Critical Operational Issue
CONOPS	Concepts of Operation
DHS	Department of Homeland Security
DRM	Design Reference Mission
FOB	Forward Operating Base
FOC	Full Operational Capability
FOR	Field of Regard
FOV	Field of View
[redacted]	(b) (7)(E)
IFT	Integrated Fixed Towers
IOC	Initial Operational Capability
IoI	Item(s) of Interest
KPP	Key Performance Parameter
LMR	Land Mobile Radio
LRU	Line Replaceable Unit
LOS	Line of Sight
MDT	Mean Down Time
MLDT	Mean Logistics Down Time

MNS	Mission Needs Statement
[redacted]	(b) (7)(E)
MTBCF	Mean Time Between Critical Failure
MTTR	Mean Time To Repair
[redacted]	(b) (7)(E)
NRT	Near Real Time
[redacted]	(b) (7)(E)
O	Objective
ORD	Operational Requirements Document
OSHA	Occupational Safety and Health Administration
OTIA	Office of Technology Innovation and Acquisition
PIR	Post Implementation Review
POE	Port of Entry
RVSS	Remote Video Surveillance System(s)
SBI	Secure Border Initiative
SES	Sector Enforcement Specialist
T	Threshold
T3	Train the Trainer
[redacted]	(b) (7)(E)
US	United States
USBP	United States Border Patrol

GLOSSARY

Area of Coverage - The resulting area, considering installation location of all units, view shed and LoS obstructions, etc., within which USBP can successfully conduct surveillance activities using the system or a combination of systems. .

Area of Interest - A targeted area within a USBP Station's AoR that requires surveillance due to the risk level associated with border threat exploitation.

FOR (Field of Regard) – The total angular area through which the sensor can direct it's Field of View.

FOV (Field of View) – The horizontal and vertical angles visible by or through an electro-optic system at any specific instant.

Full Quality Imagery – Imagery recalled from storage that retains the exact characteristics (e.g. resolution, format, etc) of the original imagery as it was displayed to the operator in near real time.

Geo-register - Linking an item with its geographic location, typically using GIS coordinates.

Geospatial - Pertaining to the geographic location and characteristics of natural or constructed features and boundaries on, above, or below the earth's surface; esp. referring to data that is geographic and spatial in nature.

IoI (Item of Interest) – (b) (7)(E) [redacted]

Long Weapons – Large man-portable firearms (i.e. Rifles, Shotguns, etc) that cannot generally be concealed beneath clothing.

Line Replaceable Unit (LRU) – A component of a system or subsystem which is capable of being removed and replaced at the field level.

Maritime Environment – Near-coastal area along large bodies of water including lakes, bays, and oceans including proximal shorelines. Population, legitimate traffic, and vegetation vary from dense to sparse. Time available for agents to respond to a threat is measured in seconds to minutes.

MDT (Mean Down Time) - The average Total Downtime required to restore an asset to its full operational capabilities.

MLDT (Mean Logistics Down Time) - Logistic delays that could include all delay times

Near Real Time – (b) (7)(E) [redacted]

Operational Availability (Ao) – The ratio of the system's mission capable time (MCT) divided by total time, which is the sum of mission capable time plus down time. Mathematically, this can be described by the following equation:

$$Ao = \frac{\sum MCT_{Display}}{\sum MCT_{Display} + \sum Down\ Time_{Display}} \times \frac{\sum MCT_{RVSS\ units}}{\sum MCT_{RVSS\ units} + \sum Down\ Time_{RVSS\ units}}$$

Persistent Surveillance – The ability to continuously detect, track, identify and classify border incursions 24/7 in targeted areas under expected weather, terrain, vegetation and lighting conditions.

Remote Environment – Border areas characterized by (b) (7)(E) [redacted].

Rural Environment - Border areas characterized by sparse population densities and limited transportation infrastructure/access. Terrain varies from flat to rolling hills; vegetation varies from sparse to dense. (b) (7)(E) [redacted]

RVSS System[13] – A remotely controlled system composed of both (b) (7)(E) [redacted] mounted to a permanent structure. The images are transmitted, monitored, and recorded at a central location. This system is deployed to monitor large spans of the international border or critical transit notes. To be considered an RVSS, all of the following must be present:

- The site must monitor a location at or near an international boundary, critical transit node or is used in Border Enforcement;
- (b) (7)(E) must be at a fixed location;
- (b) (7)(E) must be remotely controlled and the field of view can be changed.
- The video feed is transmitted to a central location to be monitored.

The four main components of this definition are:

- Site: The RVSS site is the geographical location of the permanent structure and all components of the platform, sub-platform and supporting infrastructure.
- Platform: A platform is a structure to which an RVSS is mounted and strategically placed throughout the Southern, Northern, and Coastal Borders. Platforms are permanent and are not mobile. Platforms may include (b) (7)(E) [redacted] or any structure that supports the sub-platform, (b) (7)(E) and transmitting components.
- Sub-platform: A sub—platform is the mounting structure for the (b) (7)(E) This structure is the (b) (7)(E) [redacted].

[13] USBP Memorandum OBP40/11.3-C, Surveillance System Definitions